

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) An image processing method for obtaining a processed image signal from an original image signal representing an original image having a certain picture element density, in which

A1 a plurality of intermediate image signals which are different in frequency band are made on the basis of the original image signal, a plurality of transformed image signals are obtained by carrying out a transformation processing on the respective intermediate image signals on the basis of respective transformation functions, and a processed image signal is obtained from the transformed image signals, wherein

the image processing method improvement comprises ~~the step of~~ defining said transformation functions by determining transformation function defining parameters for the transformation functions on the basis of the picture element density of the original image.

2. (Original) An image processing method as defined in Claim 1 in which said plurality of intermediate image signals are band-limited signals which are made by carrying out on the original image signal a filtering processing by use of filters whose coefficients of filter are determined on the basis of the picture element density of the original image signal, thereby making a plurality of unsharp image signals which are different in frequency response characteristic, and making a plurality of band-limited signals representing the signals in the

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

respective frequency bands of the original image signal on the basis of the unsharp image signals and the original image signal.

3. (Original) An image processing method as defined in Claim 1 in which said predetermined transformation functions are non-linear functions.

4. (Original) An image processing method as defined in Claim 1 in which said transformation processing is a frequency enhancement processing.

5. (Original) An image processing method as defined in Claim 1 in which said transformation processing is a dynamic range compression processing.

6. (Original) An image processing method as defined in Claim 1 further comprising the step of storing the transformation function defining parameters determined for the original image signal with the parameters related to the original image signal.

7. (Original) An image processing method as defined in Claim 1 in which said step of defining said transformation functions by determining transformation function defining parameters for the transformation functions on the basis of the picture element density of the original image comprises the steps of preparing transformation function defining parameters for at least two reference picture element densities, comparing the picture element density of the original image with the reference picture element densities, and determining the transformation function defining parameters for one of the reference picture element densities closest to the picture element density of the original image as the transformation function defining parameters for the original image signal.

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

8. (Currently Amended) An image processing system for obtaining a processed image signal from an original image signal representing an original image having a certain picture element density comprising

an intermediate image signal making means which makes a plurality of intermediate image signals which are different in frequency band on the basis of the original image signal, and
a transformation means which obtains a plurality of transformed image signals by carrying out a transformation processing on the respective intermediate image signals on the basis of respective transformation functions, and obtains a processed image signal from the transformed image signals, wherein the image processing system further improvement comprises that

a transformation function defining means which determines transformation function defining parameters for the transformation functions on the basis of the picture element density of the original image and defines the transformation functions.

9. (Original) An image processing system as defined in Claim 8 in which the intermediate image signal making means comprises an unsharp image signal making means which makes a plurality of unsharp image signals which are different in frequency response characteristic by carrying out on the original image signal a filtering processing by use of filters whose coefficients of filter are determined on the basis of the picture element density of the original image, and a band-limited signal making means which makes, as the intermediates image signals, a plurality of band-limited signals representing the signals in the respective

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

frequency bands of the original image signal on the basis of the unsharp image signals and the original image signal.

10. (Original) An image processing system as defined in Claim 8 in which said predetermined transformation functions are non-linear functions.

11. (Original) An image processing system as defined in Claim 8 in which said transformation processing is a frequency enhancement processing.

12. (Original) An image processing system as defined in Claim 8 in which said transformation processing is a dynamic range compression processing.

13. (Original) An image processing system as defined in Claim 8 further comprising a means for storing the transformation function defining parameters determined for the original image signal with the parameters related to the original image signal.

14. (Original) An image processing system as defined in Claim 8 in which said transformation function determining means stores therein transformation function defining parameters for at least two reference picture element densities, compares the picture element density of the original image represented by the original image signal with the reference picture element densities, and determines the transformation function defining parameters for one of the reference picture element densities closest to the picture element density of the original image as the transformation function defining parameters for the original image signal.

15. (Currently Amended) A computer-readable recording medium loaded with a program for causing a computer to perform an image processing method for obtaining a

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

processed image signal from an original image signal representing an original image having a certain picture element density in which

1
A a plurality of intermediate image signals which are different in frequency band are made on the basis of the original image, a plurality of transformed image signals are obtained by carrying out a transformation processing on the respective intermediate image signals on the basis of respective transformation functions, and a processed image signal is obtained from the transformed image signals, wherein the ~~improvement comprises that the program~~ further includes ~~the step of~~

defining said transformation functions by determining transformation function defining parameters for the transformation functions on the basis of the picture element density of the original image.

16. (Original) A computer-readable recording medium as defined in Claim 15 in which the step of making said plurality of intermediate image signals comprises the steps of carrying out on the original image signal a filtering processing by use of filters whose coefficients of filter are determined on the basis of the picture element density of the original image, thereby making a plurality of unsharp image signals which are different in frequency response characteristic, and making a plurality of band-limited signals representing the signals in the respective frequency bands of the original image signal, as said intermediate image signals, on the basis of the unsharp image signals and the original image signal.

17. (Original) A computer-readable recording medium as defined in Claim 15 in which said predetermined transformation functions are non-linear functions.

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

18. (Original) A computer-readable recording medium as defined in Claim 15 in which said transformation processing is a frequency enhancement processing.

19. (Original) A computer-readable recording medium as defined in Claim 15 in which said transformation processing is a dynamic range compression processing.

20. (Original) A computer-readable recording medium as defined in Claim 15 in which the program further includes the step of storing the transformation function defining parameters determined for the original image signal with the parameters related to the original image signal.

21. (Original) A computer-readable recording medium as defined in Claim 15 in which said step of defining said transformation functions by determining transformation function defining parameters for the transformation functions on the basis of the picture element density of the original image comprises the steps of preparing transformation function defining parameters for at least two reference picture element densities, comparing the picture element density of the original image represented by the original image signal with the reference picture element densities, and determining the transformation function defining parameters for one of the reference picture element densities closest to the picture element density of the original image signal as the transformation function defining parameters for the original image signal.

Claims 22-99 (Canceled).

100. (New) The image processing method of Claim 1, further comprising frequency enhancement processing means for enhancing a particular frequency component.

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

101. (New) The image processing method of Claim 1, further comprising dynamic range compression processing for reducing the contrast of the high density range and/or low density range.

102. (New) The image processing system of Claim 8, further comprising frequency enhancement processing means for enhancing a particular frequency component.

103. (New) The image processing system of Claim 8, further comprising dynamic range compression means for reducing the contrast of the high density range and/or the low density range.

104. (New) The computer-readable medium for causing a computer to perform an image processing method of Claim 15, further comprising frequency enhancement processing means for enhancing a particular frequency component.

105. (New) The computer-readable medium for causing a computer to perform an image processing method of Claim 15, further comprising dynamic range compression processing means for reducing the contrast of the high density range and/or the low density range.

106. (New) The image processing method of Claim 1, wherein the picture element density of the original image is automatically obtained when the original picture image signal is processed.

107. (New) The image processing method of Claim 106, wherein the picture element density of the original image is a value of resolution which represents the relation between the size of the original image and sampling intervals for obtaining the original image signal.

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

108 (New) The image processing method of Claim 106, wherein the picture element density of the original image is the read density at which a radiation image recorded on a stimuable phosphor sheet is read.

109 (New) The image processing system of Claim 8, wherein the picture element density of the original image is automatically obtained when the original picture image signal is processed.

110 (New) The image processing system of Claim 109, wherein the picture element density of the original image is a value of resolution which represents the relation between the size of the original image and sampling intervals for obtaining the original image signal.

111 (New) The image processing system of Claim 109, wherein the picture element density of the original image is the read density at which a radiation image recorded on a stimuable phosphor sheet is read.

112 (New) The computer-readable medium for causing a computer to perform an image processing method of Claim 15, wherein the picture element density of the original image is automatically obtained when the original picture image signal is processed.

113 (New) The computer-readable medium for causing a computer to perform an image processing method of Claim 112, wherein the picture element density of the original image is a value of resolution which represents the relation between the size of the original image and sampling intervals for obtaining the original image signal.

114 (New) The computer-readable medium for causing a computer to perform an image processing method of Claim 112, wherein the picture element density of the original

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/482,896

FI
image is the read density at which a radiation image recorded on a stimuable phosphor sheet is
read.
